



Solid Copy

The International CWops Newsletter

August

2013

Issue No. 43



The Dreaded Wouff Hong (See [W6SX Article](#))

CWops "CWT"

14, 28 August 2013

Start times: 13Z, 19Z, 03Z (15, 29 August)

1-hour each session

Exchange: name/number (members)
name/SPC (non-members)

CWA Days

7, 21 August 2013: 1300Z, 1900Z, 0300Z(+1)

CWops "neighborhood"

Look for CWops on 1.818, 3.528, 7.028, 10.118,
14.028, 18.078, 21.028, 24.908, 28.028, 50.098

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Contents

[President's Message](#)

[From the Editor](#)

[CW Musings](#)

[Ramblings About Learning Morse](#)

[The Rettnsnitch and Wouff Hong](#)

[CW Academy](#)

[CW Open Announcement](#)

[CWT Report](#)

[ACA/CMA Scores](#)

[New Members](#)

[Nominees](#)

[QTX Report](#)

President's Message

I hope you are all enjoying your summer (in the Northern Hemisphere) and your winter (south of the equator). I remember first learning about our Earth's seasons. It all had



to do with the angle of our planet's axis of rotation. As we moved around the Sun, one or the other hemisphere would get the more direct rays of the Sun. In the Northern

Hemisphere, the summer started on June 21 and in the Southern Hemisphere, it started on December 21. In between we had the equinoxes that signaled our fall or spring seasons. Of course, fall in one hemisphere marked the beginning of spring in the other,

and so on. Just think, if our axis of rotation were perpendicular to the plane of our orbit, there would be no seasons.

Later, when I became KN2UMU at age 11, I learned about the sunspot cycle. We were then in Cycle 19 which turned out to be one of the most energetic. Sitting there in the cellar, with my 20 watts of output, and my homebrew 15 meter ground plane (12 feet off the ground), I could work EU stations on CW almost at will. Having no real perspective, yet, I thought that Cycle 19 was how ham radio propagation would always be. ☺

The other day I read a news article stating that our current sunspot maximum has been the weakest in 100 years, and that this is consistent with overall observed cycles. In other words, every 100 years or so, we have a period of weak cycles.

So, what's going to happen to ham radio if a weak Cycle 24 is followed by a weak Cycle 25? Well, it won't affect line-of-sight UHF bands much; the 2 M HT crowd probably won't notice any difference. But, it means that all the things that depend upon consistent and stable HF propagation will be affected – DXing and contesting, for sure. Those of us running hundreds of watts of power to gain antennas will find weak signals, closer in, to become more the rule than the exception. Remember the sunspot null between Cycles 23 and 24? Day after day we would hear virtually nothing on 10, 12 and 15 meters, for example.

But, here's one thing we do know for sure. Under poor conditions, sustained or periodic, you have a better chance of making that DX, contest, or ragchew QSO using CW and Morse. Therefore, it may become even more important to promulgate the knowledge and skill of Morse code operating so that HF operators who indulge in CW will still hear and be able to work others while the phone ops struggle with barely intelligible link ups.

I hope the prognosticators are wrong about Cycle 24 and its successors. But I know that so long as there are CW operators who can hear and return my plaintive CQs, I'm a happy camper.

Back to Business

CWops has been using the Northern Hemisphere summer months to gear up for CW Academy starting again in September, to bolster the popularity of CWT and QTX, and to promote and inform the ham community about our upcoming CW Open (Aug 31 at 0000Z, 1200Z and 2000Z).

I really want CW Open to be a rousing success. So, I spent a bunch of my own money to book a flight to and from Tokyo so I could personally invite as many JA contestants to join in as I can.

You can all do your parts, too, and it won't cost you anything. Just turn out for CW Open on August 31. Do at least one full session, or two, or all three. If you can't do a full session, then do an hour's worth.

We currently have nearly 900 members located in every ITU region. If only a third of us participate in CW Open this year, that will put 300 of us in play. If a quarter of the 600 JA contestants I've reached out to show up for the game, that will be another 150 players. And if a quarter of the nearly 2000 others that have been invited via email show up, you'll find another 500 players. Just imagine a CW Open with about 1000 active players in each session. You will never run out of people to work during each session. Your only limitation will be how quickly you can work and log 'em. Wouldn't that be a thrill? So, show your pride in CWops by playing in our biggest on-air event. Make Dean's

(NW2K) first management of the event something to remember. And keep Alan (AD6E) really busy checking all those CW Open logs. I'll see you on August 31, on lots of bands, in all three sessions.

73,

Rob K6RB

From the Editor – Get on The Air!



The US Field Day exercise every June encourages non-hams, newcomers and “retreads” (amateurs returning to the air after a long absence) to [Get on The Air](#) by operating a separate “GOTA” station, preferably with an active amateur serving as “coach” and, if necessary, legal control operator. FD categorizes entries by number of transmitters and the GOTA station does not count as an extra transmitter. The GOTA station signs a separate call and can contact anyone for credit, even the same calls logged by the main station(s). This great idea has introduced or re-introduced countless people to the joys of ham radio and contest-style operation. I'll never forget coaching one particular newcomer, an acquaintance and VHF-only operator at that point, through her first 20 HF QSOs ever. She didn't know the section abbreviations used in the exchange, but since many sections are whole states, she was particularly excited to hear things like “Two Alpha Nebraska” or “One Delta South Carolina.” Yes, it was phone operation, but it was an eye-opener for her and for the rest of us.

Let's see what we CW operators can learn from the GOTA movement: FD is the largest operating activity in the US, at least in terms of number of participants, so there is no shortage of potential contacts. But what happens during the rest of the year? Well, on weekends there are plenty of calls to be heard, if not potential rag-chewers then at least participants in a state QSO party or national contest. You can usually make enough contacts on a weekend to test a new antenna or check out a change inside your station. But mid-week, at least in the US, things get awfully quiet. Awful! CWops has done something about it with our bi-monthly CWT events that make 100-QSO hours possible on a GMT Wednesday or Thursday, six times a month. More on that below. The Northern California Contest Club sponsors another 30-minute Sprint-like event every Thursday (early Friday GMT). But these are all contest-format events, they are brief and may not coincide with YOUR schedule. The in-between times are quiet indeed, good times perhaps for making noise level measurements. So let's try to GET ON THE AIR during these quiet times. Just make a few Qs after dinner on a weekday, at lunch time or before going to work in the morning. If you're retired like many of us, the entire “business day” is an opportunity to make a few Qs. Don't hear anything? Call CQ on a “CWops Neighborhood” frequency, “on the 8's.” If you're a veteran contesteer, it may not be particularly exciting to rouse an actual neighbor or resident of the state or country next to yours, but it's good to know that your station is (still) working, that ham radio is alive and well mid-week, and you might find an old friend or make a new one.

“Use it or lose it” is an aphorism we hear a lot in other contexts but it applies equally well to our precious ham bands. Let's declare war on empty bands! We have almost 1,000 members. If we each made an extra five QSOs during the work week, one per day on average, the bands would be noticeably livelier. Instead of using changes in your station as an excuse to get on the air, use a brief,

daily or weekly operating stint as an excuse to tweak your station. “Continuous improvement,” an industry maxim, applies equally well to our ham stations. Don’t use empty bands as a reason to leave the power off. Consider them to be a challenge to get on the air. Set up an automated CQ while paying the bills or reading the news. Take a look at a Reverse Beacon and easily see where your signal is audible. If your antenna turns, turn it that way! (I just made a quick 1700Z QSO with a K0 while writing this column. He mentioned that he was delighted to hear a W6 this early in the day.) Give people something to work and they, too, will get on the air and give you a call. We can do this, folks. Weekday ham radio is for everyone, all the time.

Speaking of CWT weekday QSO madness, in a recent hour, N6RO made 135 contacts ... and lost in score to perennial winner N4AF! That’s pretty exciting weekday action from inside the U.S. Note to European and Asian members: Give Ken and Howie some competition by recruiting more members and non-member CWT operators in your regions!

We note with sorrow the unexpected passing of an early CWops member, Mori Young KR5V, CWops #90. I knew him from his Bay Area days although he moved to Texas long ago. He was always enthusiastic about chance encounters on the air with old friends. Keep that in mind in your day-to-day operating. Your next QSO with a friend could be your last chance.

In a disturbing personal message to the CWops leadership, a non-member warns of some incorrect QSL manager data on QRZ.com. He implies that some of the errors are not simple mistakes, with one ham claiming to manage many DX calls who is not, in fact, their QSL manager. It is disappointing to think that a member of our larger ham radio fraternity would intentionally claim such responsibility. CWops as an organization does not get involved in such controversies, but the Latin *caveat emptor* seems to apply here. When requesting QSL cards by direct mail, be careful that you send yours to the right place.

This month’s Solid Copy includes the usual columns of club news and officer reports plus some interesting additional articles. Jerry AC4BT draws some similarities between [CW and chess](#), both good ways to keep our minds sharp. President Rob K6RB adds some more to the debate about [CW as a language](#). And Hank W6SX recalls the [dark days of the Wouff Hong](#), suggesting a milder way to deal with poor operating practices. Don’t miss the [CW Open Announcement](#) – it’s time to put this annual club event on your calendar and get your station ready. If you’re reading this newsletter, it must be August or close to it! See you on the bands!

73,

Rick N6XI

CW Musings

Jerry Weisskohl AC4BT

CWOPS # 1148

In addition to Ham Radio and CW, I spend a lot of time studying and playing chess. I have since being a teenager. I can find no documented case of an active chess player ever getting Alzheimer’s. I

also can't find any other activity, physical or mental, that can make the same claim. Recently I've read that for each year you continue to work and not retire your chances of living a longer life increase 3%. There are numerous recommendations to keep yourself active and lead a healthy lifestyle but nowhere else can such a claim, like chess and no Alzheimer's, be made.

What all these studies have in common and can all agree upon is the strong advice to stay mentally active. It's just common sense. Engage your mind, expand your interests and knowledge and you keep those brain cells active and your memory from declining.

I'm a chess master, backgammon master and I do the daily New York Times puzzles – all great ways to exercise your mind. But most importantly, I'm involved in the many aspects of CW and CW opportunities that being a member of CWOPS makes available. My mind and memory remain sharp.

CW can also be a great way to keep your brain healthy and alert. I don't just mean getting on the air for contesting, although contesting is fun. I mean approaching CW with goals and a plan. When going after that DX station, think of creative ways of making the contact. Challenge yourself by cutting down on the power and employing techniques like various timing methods where you wait for a break and jump in with your call sign or anticipating where the DX is listening when operating split (without using a Panadapter), or other unique creative strategies. Think of the DX as if it needs to be cornered, contained and conquered and devise and execute a war-like battle plan to surround and capture it. Review and refine what works best. Revise and perfect your strategies. Share your ideas with fellow CWOPS or write it down to be used as training material.

I was at a CW event recently and talked to one CW enthusiast who told me they never get on anymore unless there is a contest and then they park themselves on a set frequency and work as many stations as possible. While this is the point of contesting and there is nothing wrong with this, we need to do more than just this in order to really exercise our minds while enjoying our CW hobby.

So you are reading this and find that you are a big contest, enjoy and look forward to the bi-weekly mini CWT contests, etc. Here is what I am suggesting. If you want to really exercise your mind, then sign up to be a CW Academy instructor! You'll be reviewing, modifying and creating new methods to teach others CW and get them to love our hobby as much as you do. You'll be interacting, in real-time, with enthusiastic students who want to share your knowledge. You'll be discovering new insights and new approaches from the students themselves. You'll be a mentor that others will look up to but more importantly your mind will be fully engaged in the exact type of activity that keeps you mentally alert and sharp for life! It's not "rocket science," being and staying mentally active has proven to keep away Alzheimer's and keeps you healthy and productive.

Our hobby is great but we need to entice young people, or others not so young that are new to CW, to join our ranks and discover the many joys that CW and Amateur radio have to offer.

It's your choice, take the plunge and volunteer, try out being a CWOPS CW Academy instructor. You'll be helping yourself stay healthy and mentoring others at the same time. It doesn't get better than that!

Some Ramblings About Learning Morse

Rob Brownstein K6RB

We have had some very interesting articles about Morse as a language and so on. Some were based on linguistics, some on qualitative observation, and others on our experiences copying Morse during conversational QSOs. One of the results of these ideas is a stress on teaching Morse as words rather than an aggregation of letters.

To be sure, those of us who regularly engage in conversational QSOs know full well that some letter combinations are immediately heard as words, “ur” for example. But without any rigorous proofs at hand, I have to question the contention that Morse is a language.

When you read this page, for example, you see words for the most part rather than letter combinations. Your eyes are used to seeing most of these words, and your brain is quickly matching visual patterns with words. You’re not sitting there saying to yourself silently “atch, aee, vee, eee.” You’re seeing and saying “have.” The sounds you hear are not the constituent letter sounds; you’re hearing the word sound, and it’s “h ae v.”

If you say the letters “b” “l” “o” and “w,” it does not sound like the word “blow.” If we’re teaching someone English, we don’t say “b” “l” “o” “w,” we say “blow.” But, when we’re listening to the word being sent via Morse, it sounds like “b” “l” “o” “w.” It’s an aggregate of letter sounds, not a word sound. Ultimately, our ears/brains will hear that combination of letter sounds as the word “blow” but this is no different than my reading this page by saying letter after letter, with appropriate spaces, and having someone get used to hearing “s” “o” “m” “e” as the word “some.”

The reason I bring this up is that in our zeal to teach people Morse we may over stress the point of Morse being a language. We may push our learners to hear “words” rather than “letters.” And, whereas that will certainly help with many conversational QSOs, if those conversations are made up of common words or abbreviations, it will not help when someone in Cleveland works a station in Israel and gets a QTH of “a” “s” “h” “d” “o” “d” OR “n” “e” “t” “a” “n” “y” “a.” I contend that someone trying to head copy those QTHs and having learned Morse as words rather than letter aggregations will not copy those locations, because the combination of sounds will not sound familiar and will not conjure up a known word.

Copying in one’s head is not a simple skill. And, by the way, copying in one’s head if I’m standing there saying “p” “a” “g” “e” is not easy for many people, either. Some people have the ability to hear the letters being spoken and to quickly assemble in their mind the aggregate and see the word. Some people cannot do that, even if said at slow speed. They’ve never tried doing that. They can read the printed word perfectly, and even quickly, but have trouble mentally stringing together the letters being spoken and coming up with the word equivalent. Now, add the additional skill of hearing a sound pattern, then identifying it as a letter, then stringing the succession of identified letters into a word.

My experience with my Level 1 classes is that at least 25 percent of them have real difficulty with head copy because they cannot mentally see those letter strings as words. Sure, with repeated practice, they’ll hear “tea” “eat” “ate” as words, but it’s difficult to have a conversation. ☺

With students who have that problem in mental gymnastics, I have found that having them write down the letters helps them get through it, and also begins helping them build up those mental muscles. Perhaps before starting a Morse class by sending Morse, we should spend the first session or two saying letters, with appropriate spaces, so that our students can begin visualizing those letter strings and mentally see them as words.

One thing I do know for sure is that if a learner is taught to hear words rather than letter aggregations, they may do great when having a conversation including the words they've learned, but they will never copy strange letter combinations, like Ashdod or Netanya, or ornithologist.

So, in some ways, learning Morse is akin to learning a language, but in other ways it's more like learning to hear a succession of letters and being able to mentally organize them into words.

The Rettysnitch and the Wouff Hong

Hank Garretson W6SX

Back in the day, The Old Man (W1AW) advocated using the Rettysnitch (below) and the Wouff Hong (See P. 1) to discipline hams who exhibited “rotten-operating-practices.” Early in 1919, The Old Man wrote in QST, “I am sending you a specimen of a real live Wouff Hong which came to light out here . . . Keep it in the editorial sanctum where you can lay hands on it quickly in an emergency.” The “specimen of a real live Wouff Hong” was presented to a meeting of the ARRL Board, and QST reported later that “each face noticeably blanched when the awful Wouff Hong was . . . laid upon the table.” Ah, the good-old days.



These days, one sees grousing on various reflectors about poor operating practices, lousy fists, and trashy signals. You know, we are all part of the problem. Or at least we can all help improve things. Most of the behavior described is by hams who don't know better, who have not been mentored or taught. Shoot, most of the time they don't even know they are doing something wrong.

I sometimes send gentle emails to hams suggesting that they will have more success and more fun if they improve their operating technique or clean up their signals. In many cases, I get grateful “I didn't know that” return emails. More satisfying, often I work a guy later and he's doing it better.

Be part of the solution. Send some gentle emails.



CW Academy – Growing!

By Rob Brownstein K6RB and Will Baber WJ9B

The CW Academy continues to be incredibly successful at attracting new students. As of Sunday, July 28, we have over 70 signups for the January-February 2014 semester. The breakdown is 48 Level 1, 19 Level 2, and three Level 3.

We have beefed up our Level 1 advisor team but we're going to need more advisors. The signups are predominantly in the central and eastern US time zone areas. Members interested in joining the advisor team should go to the CW Academy tab and fill out an advisor signup form.

The group is quickly evolving the Level 1 course from one where the advisor spends a lot of time teaching to one where the advisor does most of his/her time assessing and advising. The teaching/learning is done between advisor sessions, by the students, using the tools we prescribe. Toward that end, we have now broken down the homework assignments into segments that each student can copy and paste into a Morse translator program (typically Morse Translator), and spend their time learning the material before each online session. The session then becomes one where the advisor assesses each student's progress and gives them advice where he/she notes a problem brewing.

We are also working on coming up with our own unique tool that will allow future Level 1 students to practice copying and sending using our application on virtually any platform (e.g. laptop, desktop, tablet or smartphone). The sending tool will be truly unique. It will give feedback to the student indicating exactly how they are sending. So, for example, if asked to send "tea" and the student provides too little space between the "t" and the "e," the tool will display "na." On the other hand, if a student leaves too much time between, say, the "e" and "a," the tool will display "te a." Students can repeat their sending until the tool shows the correct word or phrase. By the time they meet with their advisors, their sending should be close to perfect ☺.

A few software "pros" have been approached with developing this tool based on specifications, but right now it is still in limbo. The tool involves essentially two functions. In the copying practice mode, the tool sends a segment and the student can repeat it until it is understood, then move on to the next segment, and so on. In the sending practice mode, the tool displays what the student is supposed to send, then after the student sends it, it displays what it copied. It is similar to the code reader technologies that already exist, but the advantage is that it knows what is supposed to be sent, so it can focus on the timing. We'll keep you all posted on progress along this new tool front.

The September/October sessions will get underway after September 1. All advisor assignments have been made and during August, the advisor team will contact their assigned students and arrange the 8-week course schedule.

The CW Academy team can always use more advisors. We are not student limited; we are advisor limited. For example, if you go to the CW Academy tab you'll see that current signups are being placed in the April/May 2014 semester. Each time we run this program, the cutoff date happens

sooner, and that cutoff date is totally driven by the advisors on hand and the time-zone distribution of signups. This is your personal opportunity to give back to ham radio. QSOing, contesting and Dxing are all wonderful; but helping to increase the population of Morse competent hams is a hobby sustaining effort that will help ensure that new, young members such as K2CYE will have other Morse operators to work 30 years from now. Morse may also be the magic elixir that will attract teenagers, again, to ham radio because it appeals to their desire to do something that not everyone else can do.

So think about how you spend your day. Can you fit in a couple of hours a week to help advise new Morse students? If so, please consider filling out an advisor form and join the group.

Get Ready for the
Third Annual
CW Open Event



- Date:** August 31 2013
- Times:** **Session 1:** 0000Z-0359Z, **Session 2:** 1200Z-1559Z and **Session 3:** 2000Z to 2359Z
- Bands:** 160 – 10 meters (no WARC), CW only
- Rules:** Work anyone, anywhere ONCE per band per session.
- Exchange:** serial number and name (e.g. 42 JOE)
- Scoring:** 1 point per valid QSO; 1 multiplier for each call sign worked – ONLY one time per session
- Logging:** Supported on N1MM, WriteLog, SD, Skookum, and many others
(see www.cwops.org/cwopen.html)
- Awards:** Each session is scored and awarded as a single contest; aggregate session scores are counted toward aggregate-score awards, too
- Teams:** Teams of up to 10 operators can be registered, before August 31, for a team competition
- Categories:** Single operator categories only – SOHP, SOLP and SOQRP. HP is more than 100w up to legal limit of operator's country; LP is more than 5 watts up to 100 watts; and QRP is 5 watts or less.
- Assisted:** Operators may use spotting, RBN. No self spotting. No multiop.
- Logs:** Separate logs must be submitted for each session of operation. Counts start over at 1 for each session.

CWT – The Cwops Tests

Recently, we have had a very healthy discussion about our Cwops Tests; lots of good thoughts. I've read every post. Thank you. President K6RB gave a good summary in a recent email. As Rob says, we have a successful, fun, growing event. No changes for now.

CW fans, we named the Cwops Test a test, not a contest. CWTs offer something for everyone. You can get on and make a few contacts with fellow CW enthusiasts. You can get on and extend a friendly welcome to nonmembers trying a CWT for the first time. Or, if inclined, you can whet your competitive juices and try for a high score. Or all of the above, all in one session.

Code speed: We should each operate at a speed we're comfortable with. When someone calls me at a slow speed, I make a quick judgment. Sometimes I slow down to his speed. Sometimes I split the difference between his speed and mine. Sometimes I don't slow down at all. The most important part of my calculus is what will make the other chap feel welcome. Most of the time I get it right and no repeat is requested. I also try to thank slow senders by name. We are a CW brotherhood, and we want everyone to have fun and come back for more. Speed is a big part of your on the air persona, but even more important is the attitude you present. Make everyone feel welcome.

The first rule of CW operating is to have fun and to share the fun.

CW Exuberantly,

Hank, W6SX

CWT Manager

From the VP – ACA/CMA Scores



<u>Call</u>	<u>ACA</u>	<u>CMA</u>
AA3B*	474	3560
KZ5D*	438	2802
F6HKA*	406	1652

VE3KI*	378	2024
K6RB*	367	2014
SM6CNN	333	2269
W1RM*	329	2532
N5RR	317	2576
DL8PG*	303	1137
NN6T*	290	967
EA8OM/DJ1OJ	253	1712
W1UU*	219	1250
AD1C*	202	963
W9ILY	188	1320
N2UU*	188	1630
WX7SJ	129	261
K6DGW	127	979
PA7RA	124	891
EA1WX	114	1206
W5ASP	51	418
W4VQ*		1196

* = updated data

73, Art, KZ5D

The Annual Competition Award (ACA) is based on the number of members worked each calendar year. You get one point per member worked, once per year. It resets to zero at the beginning of each year. The Cumulative Member Award (CMA) is based on how many members you've worked since January 3, 2010 on each band and continues to grow in perpetuity. The Cwops Award Manager (CAM) software, available at no cost, will help you keep track of your ACA and CMA totals.

From the Secretary – New Members



With great pleasure we welcome the following new members:

1190	K6IFF	Bill
1191	VK4TJF*	James
1192	N5WE	Charlie
1193	VA2FDT*	Szabi
1194	OM0CS	Kamil
1195	WB6BEE*	Don
1196	VK7CW	Steve
1197	KA3QLF*	Scott
1198	NA2AA*	David
1199	JH1JDI*	Mai

* = Life Member

73,

Jim, N3JT

Current Nominees

Need Sponsors: W4UM, AF5DM

Invitations Extended: SM2LIY, JA1GQC

For more details about nominees and status, check the “members only” on the Website: www.cwops.org

For information about joining CWops, check the Website under “membership.”

QTX Report

Enjoying the Art of Conversational CW

QTX is a program for members who enjoy casual CW QSOs. Anytime you have a QSO that goes over 20 minutes, jot down the call sign of the other station, and before the 5th of the next month, go to the website QTX page in the Members Only section and put in your total.

Much of the fun of conversational CW is getting to know some great people. This month's QTX story comes from Ann KE6OIO:

“One interesting QSO was with a rancher in Alpine, San Diego County. I suppose cooking and heating is still with propane, but otherwise, he is all solar during the day and has deep cycle batteries with 300 ampere hours for the night. He said he has never been hooked up to the grid. No doubt, the diesel generator is still on stand-by.”

CW gives us a chance to share the lives and experiences of the operators we contact, if only we take the time to get to know them. Thanks for the story, Ann.

These operators found lots of CW conversations in June –

<u>Call</u>	<u>June</u>	<u>CY13</u>
N6TT	59	305
N5IR	44	217
NN6T	36	207
K5KV	34	76
K4AHO	31	153
K5LY	26	103
AA5SR	24	150
N1ZX	24	40
K0DTJ	13	56
WA3NZR	12	110
KE6OIO	11	43
JE1TRV	11	66
N5RR	9	26
WA8IWK	7	29
K6RQT	6	15
K6RB	6	40
N3IQ	5	22
K8QI	3	36
HB9CVQ	3	8
G4CPA	1	4
N4SR		27

W5JQ	16
W4VQ	2
K6HTN	16
DL8PG	4
VE7ALQ	53
W6JMP	9
K2XX	1
W1UU	7
N1DG	2

I hope you also get a chance to enjoy some conversational CW in the days ahead and would appreciate it if you could submit your July total by August 5th. Here's where –
<http://www.cwops.org/members/qtxmo.html> .

73,

John K1ESE, CWops #792

-30-